Appendix A

# SITE SELECTION EVALUATION

This appendix describes the process used to select a preferred site and alternate sites for the Fuel Materials Facility. A set of uniform siting criteria was established and a method was developed and implemented to identify potential locations for the facility.

The siting process had three sequential steps: (1) national screening; (2) candidate site screening and selection of the best locations on candidate sites; and (3) the comparison of locations and the selection of the preferred and alternate sites.

During the first stage (national screening), the following exclusionary criteria were used:

- The Fuel Materials Facility shall be located at an active DOE site. The Atomic Energy Act of 1954, as amended, calls for the Department to act as the principal agency for the Government in producing and supplying nuclear materials for both military and commercial/industrial uses.

- The facility shall be located at a DOE site presently involved in the production or processing of nuclear materials. In addition to its non-nuclear facilities, the Department operates several production and laboratory facilities that handle nuclear materials. In the interest of health and safety, non-nuclear facilities were not considered because (1) the potential exists for the contamination of the sites; and (2) sites that presently handle nuclear materials already have developed and implemented radiation monitoring programs and are prepared to respond to potential accidents. In addition, the DOE nuclear production facilities have the necessary safeguards, security systems, and equipment in place to protect, handle, and process strategic quantities of special nuclear materials.

- The DOE site shall have readily available land to accommodate the Fuel Materials Facility and the burial grounds for solid radioactive waste disposal.

Of the 26 active DOE sites, 10 were eliminated by these criteria, leaving 16 areas for further evaluation.

The second stage of the siting process involved evaluating the 16 areas to select candidate sites for the Fuel Materials Facility and to select the best locations on those candidate sites for the facility. The following criteria were used to screen the areas:

- The availability of chemical and fuel material processing technology expertise -- The chemical and fuel material processing technologies to be used at the facility to produce the fuel material are complex and exacting. The facility should be located where the appropriate

expertise already exists; such expertise should not be required to move into a new area.

- Compatibility of DOE facility mission and product -- A number of facilities handle nuclear materials, although their primary missions or products vary. Because of differences between facilities in operating philosophies and procedures, the Fuel Materials Facility should be located on a site that produces or fabricates nuclear materials to be used for national defense purposes.

- Proximity to source materials -- The travel distance between the Fuel Materials Facility and its supplier influences the security of the material being shipped; in other words, a greater shipping distance increases the potential for an incident that could compromise the safety or security of the shipment.

- Proximity to product users -- The travel distance between the facility and the users of its products influences the security of the material being shipped.

Each candidate site was rated according to these preferential criteria. Based on the composite ratings, the Savannah River Plant (SRP) and the Oak Ridge Reservation (ORR) were found to be the preferred sites.

- Savannah River Plant -- The primary mission of the Plant is to produce special nuclear materials for national defense. The work involves extensive nuclear fuel fabrication, reactor operations, chemical separations, and waste management, and requires a large force of technical personnel.

- Oak Ridge Reservation -- Several major facilities are located on the Reservation, including (1) the Y-12 Plant, which fabricates nuclear weapons components; (2) the Oak Ridge Gaseous Diffusion Plant, which enriches uranium; and (3) the Oak Ridge National Laboratory, which has been involved in such research and development programs as the production of special nuclear materials and the reprocessing and fabrication of nuclear fuels. The Reservation employs many technical personnel.

As part of this screening stage, additional criteria were developed, both exclusionary and preferential, to evaluate potential locations on the Savannah River Plant and the Oak Ridge Reservation. Some of these criteria that were weighted more heavily than others are the proximity to utility services; shared facilities, security, and services; visual and physical isolation; topography; and distance from populated areas. The results of these studies showed that the site within the 200-F Area on the Savannah River Plant and the site adjacent to the Y-12 Plant on the Oak Ridge Reservation were the best locations.

The final stage of the screening process involved the comparison of SRP and ORR locations to determine the preferred site and alternate sites. These locations were evaluated using the following criteria: (1) visual/physical isolation, (2) safeguards and security, (3) ecology, (4) availability of utilities (steam, water, electricity), (5) likelihood of catastrophic events

(tornadoes, earthquakes, flooding), (6) availability of waste disposal facilities, (7) the necessity for new structures, and (8) the potential for radiological impact. No discernible advantage between sites was apparent in terms of the possibility of tornadoes, earthquakes, and flooding. The Savannah River Plant was rated as the preferred site using all other criteria.

The SRP site was judged to be superior in terms of isolation and safeguards and security. It would be inside the 200-F security area, which is inside the SRP controlled-access area. The proposed site at Oak Ridge would require a new security plan, double security fencing, and associated manpower.

The ecology of the SRP candidate site was also less diverse and potentially less sensitive than that at the ORR site. The SRP site consists essentially of an old field/grassland-type habitat. The ORR site, on the other hand, contains a mature mixed hardwood forest. The abundance and diversity of wildlife, particularly cavity-nesting and arboreal species, is greater at Oak Ridge.

Another area of consideration was the new facility requirements. An outer security building, control alarm center, and power house already exist at the Savannah River Plant; a new central security building would have to be constructed at Oak Ridge. Two storage areas for cold feed plus an area of approximately 15 acres would require security fencing at the ORR site. The SRP site would require fewer new structures.

Within the context of the siting study, both the SRP and ORR candidate sites were found to be acceptable as the location of the Fuel Materials Facility. A summary comparison of both sites using all criteria indicated that the SRP site is preferred in terms of ecology, opportunities to use existing buildings, distance from population centers, and the availability of existing security systems.